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extended attributes

The magazine of the OS/2 community



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In this issue

keyphrases

Features

3 Warpstock approaches

It's the longest running OS/2 community gathering—and it's this month!

6 One book, two book, red book, blue book

IBM quietly provides plenty of free documentation for OS/2 and related products. Have you read all of these books?

Departments

2 Changes and changes

We're making some changes in extended attributes. You should probably pay attention.

3 Letters

Our members offer their opinions.

4 Weird developments

Some OS/2 tools are going open source, and others are going away. Is it possible to make sense of this?

8 Interfering ways

That trap error you just got might be related to static electricity. Here's how to check.

Software

10 Drawing conclusions about DrawIt

This simple graphics application might be all you need.

14 Now starring: HTML bloat

Applications that create HTML output are convenient, but they often create bloated code. Julian explains one way to cope with it.

14 Objecting to databases

Bill's final installment on database access from Object Rexx pulls it all together.

20 New and improved

Five whole pages of new and updated applications!

Society news

11 Nothing Ordinary about this

Find out how Odin works, at our next meeting.

11 Joining the discussion

If you want OS/2 news and community more than once a month, here's how to join the user group's email discussion.

12 Calendar, meeting locations, and membership

Scheduled meetings and events, maps, directions, and the membership application.

extended attributes is the award winning monthly magazine of the Phoenix OS/2 Society, Inc.

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Changes and changes

by Bill Schindler, Editor-in-chief

You've probably noticed already that this issue of extended attributes is covering two months. Every summer, we run into a doldrums and this year was no exception. In fact, this summer drained all the articles from the pipeline and left us with four pages to print for the August issue.

We decided to do a combine two monthly issues into a larger one. But instead, we had just enough content for a "normal" issue. If we hadn't combined the issues, the September issue would have been short, too.

If you scan author names in the last few issues, you'll see that the content problem has existed for some time. A high percentage of the pages in each issue have been written by someone named "Schindler." The July issue was the worst—almost the entire magazine was written by Esther and me. With Esther starting a new job, me having multiple (paying!) contracts, and our current volunteer load, there's a major Schindler burn-out on the horizon. Not good.

So, after lots of discussion with the POSSI board, we've decided to switch the magazine to bi-monthly until the end of the year. We'll have the budget to print a larger magazine. But to print a larger magazine, we need articles. That means we need your help—write, draw, find advertisers, convince others to write. Please? ☺

Phoenix OS/2 Society, Inc

The Phoenix OS/2 Society, Inc (POSSI) is an international organization of computer users with an interest in IBM's OS/2 operating system and related issues.

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Letters

Letters to the editor should be sent to editor@possi.org or mailed to the Phoenix OS/2 Society. We reserve the right to edit all letters for content, readability, and length.



I read Esther Schindler's article in the June extended attributes, "A chat with John," with great interest.

I'm a software developer myself. Mainly, I write post-processors to translate CL-files from Pro/E (a high-end CAD/CAM package) to CNC machines. All development is done in C on OS/2, even if the target is a UNIX or NT machine. I use OS/2 because it gives me the best possible environment to detect programming errors, such as pointer errors.

John Soyring advises we should use Java. I seriously thought about that but eventually decided to stick with C and OS/2.

I see two major problems. The first is that CL-files often have a size of several 100 MB. As we are talking about production this means that translation should be done as quickly as possible.

The second problem is compatibility. There is nothing wrong with Java itself, until it comes to the implementation on Windows machines. Suppose I install the IBM JVM on a NT machine. If the customer decides to install Microsoft IE5, there is big chance that my software won't run flaw-

lessly anymore. That's because of some very nasty incompatibilities that Microsoft has implemented. I will have a hard time then explaining that it is not my fault. I've talked about these problems with IBMers, and they admit that these problems are real.

IBM is thrilled about Linux. I don't understand them. If you compare network capabilities and reliability of FreeBSD with Linux, then FreeBSD is better. However, it doesn't get the credit that Linux does. When I examine the license policies for FreeBSD and Linux, I come to the conclusion that there is no money to be earned with Linux. I don't know whether you have heard Achim Haesenmüller speak about the development efforts for the different platforms. He explains (and I agree completely) that the effort to keep your software working is huge, because every new kernel or kernel module has a lot of almost uncontrollable side effects.

To conclude: despite everything, I'll stick with OS/2.

John Bijns

Warpstock approaches...

by Luc Van Bogaert

In just a few days, hundreds of people from all over the world arrive in Philadelphia. They—and perhaps you—will attend the Warpstock 2000 Conference, celebrating OS/2 and operating system freedom.

Warpstock 2000 (www.warpstock.org) will take place on September 9-10, at the Holiday Inn Independence Mall, located in historic Philadelphia. The conference is for everyone with an interest in OS/2, whether they're software developers, corporate users, network administrators, IT managers, or end users. The event's presentation schedule (at www.warpstock.org/2000/presentations.html) includes a wide variety of topics, from beginner to advanced. You'll learn from OS/2 experts, including Mike Kaply, Walter Metcalf, Irv Spalten, David Moskowitz, Tim Sipples, Achim Hasenmüller, Scott Garfinkle, and many others.

The most exciting thing about the conference, however, is the opportunity to spend a weekend among fellow OS/2 users from all over the world. At Warpstock 2000, you can meet the people whom you've only talked to during an occasional chat session or through email messages. You will

meet the people behind the software products that you've been using.

Warpstock 2000 offers a unique combination of quality presentations, presented by some of the most well-known and respected people in the OS/2 community, while spending a fun time with old and new friends in an OS/2-friendly atmosphere. By the end of the weekend, you will leave Warpstock all charged up, full of new OS/2 plans and ready to go!

Warpstock 2000 will be the fourth event in as many years. Besides WarpTech (www.warptech.org) and Warpstock Europe (<http://warpstock.os2.org>), it's just one of three major OS/2 conferences in one year.

The Keynote Roundtable session at Warpstock 2000 will host a discussion of the future of cooperative user support for OS/2. We invite you to join the discussion and show your continuing support for OS/2 at Warpstock 2000 Philadelphia!

You can register online at www.warpstock.org/2000/registration/registration.html. ☺

Weird developments

Open source and open sores

by Esther Schindler

The last few months have taken OS/2 users on a roller-coaster ride. We have some upbeat news, including the announced availability of StarOffice and Watcom compiler source files. Yet, we also have some news that bodes ill for the OS/2 development community, and a continuing attitude from IBM that I can only label "active neglect."

Let's talk about the good news, first.

Watcom open source

Sybase, Inc. announced that it will release the source code for the Sybase Watcom C/C++ and Watcom Fortran compilers under an Open Source license agreement. As you might recall, Watcom was purchased by Powersoft, which was thereafter acquired by Sybase. The Watcom family of compilers were shelved into "no further development" status not long after Sybase took over.

According to the press release, this move will "allow existing customers to continue to evolve the Watcom compiler products for their own use."

SciTech Software, Inc. will be the official maintainer of the Watcom compiler source code, which is planned to be released under the "Open Watcom" moniker. According to the release, SciTech was selected due to its heavy use of Watcom products, its extensive cross platform experience and its record of Open Source involvement; SciTech released its commercial SciTech MGL graphics library to the Open Source community in 1997. SciTech may also be familiar to you as the author of the SciTech display drivers.

The Open Watcom site (www.openwatcom.org) will host the project source code, bug tracking database, developer discussion groups, and official binaries for free download. SciTech will also be involved in continued development of Open Watcom products. The first project is to create and distribute a binary patch upgrade release (11.0c) with bug fixes developed since the last commercial update. Afterwards, the source will be released on the Open Watcom Web site, so that any developer can use and modify the code.

For us, this means only good things. The availability of a "new" C/C++ compiler (and Fortran compiler, to a lesser degree) will enable OS/2 programmers to create and update applications. Watcom's development tools have always had an outstanding reputation; Watcom's C/C++ were used as the "fine finishing" tools before an application went out the door. Plus, it's especially heartening to learn that cross platform tools will be in the hands of people who care about them, under the supervision of a com-

pany that has a strong and recent history of supporting OS/2.

StarOffice open source

Sun Microsystems announced, in July, that it will release StarOffice 6 under the GNU General Public License on October 13. This is only a spot of good news, however, because Sun is oddly uncommunicative about what they'll do with earlier versions—particularly the 5.1a version, which was the last one released for OS/2.

Sun created and is funding an independent OpenOffice.org Foundation modeled on the Apache Foundation. Sun will hold a minority position, while Collab.Net coordinates the StarOffice community. Sun, which retains the StarOffice brand, will ship an implementation based on the OpenOffice.org source tree, and StarPortal, a hosted version of StarOffice.

However, the last version for OS/2 wasn't 6.0. What does that mean for us?

To clarify the situation, I corresponded with Amanda Carter, a Sun Customer Service Specialist. Unfortunately, Carter's messages shed little light on the subject. I wrote to Carter saying that I was given to understand that Sun's release of Star Office won't apply to the OS/2 version. If that were correct, could she please explain why?

She responded with a cut-and-paste explanation: "As part of the long-term planning for StarOffice, Sun has assessed platform demand, momentum in the marketplace, the cost of porting to those platforms, as well as the business case for adding or dropping platforms. Based on this analysis, Sun will no longer release future versions of the StarOffice Suite on OS/2. Version 5.1a will be the last version of StarOffice on OS/2. Sun will provide a range of support and transition assistance to OS/2 customers. StarOffice software will continue to be available on the Solaris operating environment, Linux, and Windows 2000/98/95/NT."

That's a complete answer, but unfortunately it didn't match the question I asked. I wrote back, pointing out that her text was old news. However, if Sun is releasing the source code under the GPL, then they no longer have to worry about "the business case" for the platform. If the source code is available, the OS/2 community can choose to provide that support itself. Yes? Or was there something here that I didn't completely understand?

Carter responded with another batch of boilerplate text: "StarOffice Source code is scheduled to be released on

October 13th, 2000. It will be available at www.openoffice.org."

Oh. Well, I guess that means we get to work with the 6.0 source code, just not the OS/2 version thereof. At this point, faithful reader, your guess is as good as mine. (I should also have contacted Sun's PR folks, but the last few weeks have been especially busy for me. I apologize.)

Whatever the details, however, the StarOffice open source release could be a good thing for OS/2 users. If someone picks up the development ball for StarOffice 6.0, it's possible for us OS/2 users to get that upgrade after all. In any case, this isn't *bad* news.

The situation gets somewhat more dim from here on out.

VisualAge goes blind

IBM announced that the "Program Services end date" for IBM VisualAge C++ compilers (for OS/2 and Windows NT) is January 31, 2001. There are currently no plans for any new versions on those platforms.

This isn't an OS/2 issue, clearly; the Windows version of VisualAge C++ is affected, too. Of course, this won't affect Windows developers overmuch, since they still have several C++ compilers to choose from. Until the announcement about the Watcom C++ compiler release, many OS/2 developers were getting rather disgusted. Although, considering the low opinion many programmers had of the last VisualAge C++ for OS/2, from a technical perspective this may not be much of a loss. I'm reminded of a story that Woody Allen told about two women visiting a hotel in the Catskills. One says, "The food here, it's poison, you can't eat it." Her friend agrees, "Yes! And such small portions!"

But don't imagine that the end-of-life equally distributed to Windows and OS/2 for the C++ compiler is evidence of IBM evenhandedness to OS/2 users. It's depressingly obvious, to this most casual observer, how much IBM wants to sweep OS/2 under the rug. Here's one example: at the recent IBM Partnerworld Developer's Conference in Las Vegas, I noticed a pedestal devoted to Workspace On Demand. I chatted with the IBMer staffing the booth, for quite a while, and learned that he'd spent years working on OS/2. When we talked about the small collection of workstations he had, demonstrating WSOD, he told me that he had another Thinkpad, set up to boot OS/2 off the server. "They told me to take it down," the IBMer said.

More annoying, in many ways, is that IBM also announced that it will no longer update the OS/2 version of VisualAge for Java. I find the message contradictory, at best.

On one hand, IBM NCSD—and John Soyring personally—have said that OS/2 users should choose platform neutral applications and create those applications using non-platform-specific tools. They've told us to move in the direction of "network computing," choosing tools that will migrate with us to whatever platform we

choose. Java is a prime example of that "platform neutral" paradigm.

But then IBM says they won't provide tools with which to create those platform-neutral applications. Doesn't that undermine the strategy message? If new versions of Java development tools aren't available for those OS/2 developers, exactly how are these people to make their migration? That's like burning the bridge before you cross it.

In this case, I did correspond with an IBM press relations person. Rather than interpret Tim Keeley's response, I'll reprint it; make your own evaluation.

"Stopping IBM development of AD tools for hosting on OS/2 and withdrawing support for AD [application development] tools on the OS/2 platform is entirely consistent with our OS/2 strategy for e-business. John Soyring, Vice President, IBM e-business operating systems solutions, has been advising OS/2 software developers since 1995 to use Windows NT, AIX or (recently) Linux, as their development platforms.

"The reason is that the largest set of commercial AD tools is available on these platforms, and vendors who create new or enhanced tools are developing for these platforms. Very few AD tool developers, if any, develop their tools to be hosted on OS/2 as the number of software developers using OS/2 as their development platform is too small to justify an investment.

"At the same time, using tools on other platforms to create applications which run on multiple platforms (including OS/2 Warp 4 or OS/2 Warp Server for e-business) is entirely consistent with IBM's strategy for OS/2... and consistent with what John told you when you interviewed him on April 24.

"This approach fully supports IBM's Application Framework for e-business. Net: Our messages are not contradictory."

In point of fact, John Soyring did not say that OS/2 users should develop on other platforms. He has never said that to me, once, in the several conversations we've had since 1995 (or since 1992, when we first met). He has said repeatedly that OS/2 developers should use cross platform tools, particularly Java—but Keeley's statement does not match my experiences in the least.

You know, I'd have accepted their news graciously, if they claimed sales too low to justify development. I wouldn't like it, but I'd accept it. For IBM to claim that this is consistent with their policy really irks me.

Have you seen differently? I'd like to hear about it. ☹

This month, POSSI board member Esther Schindler is starting her new job as Senior Editor at PlanetIT.com. You can reach her at esther@bitranch.com.

One book, two book, red book, blue book

by Alan Zeichick

One of IBM's better services for its customers has been its Redbook program, where experts publish excellent technical documents specific to IBM products. The Redbooks are available free for the download in Adobe's PDF format from IBM's Web site at www.redbooks.ibm.com. IBM has also arranged to have the more popular Redbooks published on paper. They can also be ordered from various online publishers like Fatbrain or Amazon, for prices ranging from about \$20 to \$50.

Before you download, realize that many of the books are multiple megabytes in size—I just grabbed one that's 6.8MB—and unfortunately, IBM doesn't tell you how big the books are in megabytes, just in pages. So, before you download, make sure you have a fast Internet connection! By the way, before you can access the Redbooks, you'll have to register with IBM, but this is a free process, and they don't ask too many questions.

Here's a list of reasonably recent Redbooks (published within the past five years) which pertain to OS/2; the newest titles are listed first.

- Lotus Domino R5 on OS/2 Platform Exploring New Features and Interoperability
- OS/2 Warp Server for e-business
- Migrating to OS/2 Warp Server for e-business
- DCE and DFS Performance Tuning and Problem Determination on AIX and OS/2 Warp
- IBM Communications Server for OS/2 Warp Version 4.1 Enhancements
- Migrating Micro Focus OS/2 Dialog System Applications to IBM VisualAge for COBOL for OS/2
- Workstation Client/Server Implementation Using VisualAge COBOL for OS/2 and COBOL Set for AIX
- LANRES/VSE: Integrating OS/2 LANs into S/390 VSE Systems
- OS/2 Warp Server, Windows NT, and NetWare: A Network Operating System Study
- Inside the Directory and Security Server for OS/2 Warp
- Getting to Know OS/2 Warp 4
- ADSM for OS/2: Advanced Topics
- Host/Workstation Client/Server Implementation Using VisualAge COBOL on OS/2, AIX, and MVS
- TCP/IP Implementation in an OS/2 Warp Environment
- Open32 Developer API Extensions for OS/2 Warp
- Administering IBM DCE and DFS Version 2.1 for AIX and OS/2 Clients
- Inside OS/2 Warp Server, Volume 2: System Management, Backup/Recovery and Advanced Print Services
- Automating Problem Resolution with SystemView for OS/2
- OS/2
- ADSM to Back Up OS/2 LAN Server and Warp Server
- Personal Communications Version 4.1 DOS, Windows, and OS/2 Implementation
- OS/2 Security Enabling Services: A Developer's Guide
- The OS/2 Debugging Handbook—Volume IV System Diagnostic Reference
- The OS/2 Debugging Handbook—Volume III System Trace Reference
- The OS/2 Debugging Handbook—Volume II Using the Debug Kernel and Dump Formatter
- The OS/2 Debugging Handbook—Volume 1 Basic Skills and Diagnostic Techniques
- OS/2 Warp (PowerPC Edition) A First Look
- The Guide to OS/2 Warp Device Drivers
- Understanding OSF DCE 1.1 for AIX and OS/2
- Software Distribution Using SystemView for OS/2 Version 1.1
- IBM VisualAge for COBOL for OS/2 Object-Oriented Programming
- IBM VisualAge for COBOL for OS/2 Primer
- IBM VisualAge for COBOL for OS/2 Workframe User Guide
- Inside OS/2 Warp Server, Volume 1: Exploring the Core Components
- IBM Communications Server for OS/2 Warp Version 4.0 Enhancements
- OS/2 Security Enabling Services
- DB2 for MVS Connections with AIX and OS/2
- OS/2 Warp Generation, Volume 1: OS/2 Warp Version 3, OS/2 Warp with WIN-OS/2, OS/2 Warp Connect and BonusPak
- IBM StorePlace Distributed Data Services for OS/2: CID-Enabled Automated Installation and Configuration
- Plumbers' Workbench CMS Pipelines and OS/2 Pipe Synergy
- IBM MQSeries Three Tier for OS/2 Experiments and Experiences For Beginners
- Personal Communications for the Mobile Users DOS, Windows 3.1, and OS/2
- Inside OS/2 LAN Server 4.0
- OS/2 Installation Techniques: The CID Guide
- Workgroup Management Using SystemView for OS/2
- Object-Oriented Application Development with VisualAge C++ for OS/2
- Inside Client Access/400 Optimized for OS/2
- VisualAge 2000—Remote Edit, Compile, and Debug Using VisualAge COBOL 2.0 on OS/2

- IBM eNetwork Communications Server for OS/2 Warp Version 5.0 Enhancements
- OS/2 Warp Server Integration Guide for IBM Netfinity and IBM PC Servers
- The OS/2 Warp 4 CID Rapid Deployment Tools Migration and Installation Scenarios
- The OS/2 Warp 4 CID Software Distribution Guide
- Network Clients for OS/2 Warp Server: OS/2 Warp4, DOS/Windows, Windows 95/NT, and Apple Macintosh
- OS/2 Warp Server Functional Enhancements, Part 1
- OS/2 Warp Generation, Volume 2: Exploring LAN Connectivity With OS/2 Warp Connect
- Understanding Performance Tuning Theory for IBM OS/2 LAN Server
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Interfering ways

Coping with electromagnetic interference

by David Both

Recently, my friends and I have encountered several problems with EMI (Electromagnetic Interference). It is a common problem, with many symptoms and causes.

Electronic pollution

EMI is unwanted electronic signals that are transmitted or received by an electronic device. Your computer can generate EMI, which can interfere with the operation of other electronic devices. And other devices can generate EMI that interfere with the proper operation of your computer.

EMI can be propagated through the air, as with radio waves, or through the power lines to the power plug of your computer. These signals, whatever their source and however they are propagated, can cause your computer to crash unexpectedly or to exhibit any number of strange and weird symptoms. EMI symptoms can include lockups and hangs, trap and SYSxxxx errors, repeated booting, CRC and disk media errors, and internal processing errors. In other words, many errors which can be caused by real hardware or software problems can also be caused by EMI problems—which are just as real but harder to find and prove.

EMI is caused by two types of electromagnetic fields: radio frequency fields and magnetic fields. Although EMI affects the system hardware, symptoms can appear to be the result of problems in the operating system. Any operating system can be affected.

A number of different electromagnetic phenomena can cause problems for computers and other electronic equipment. Electrostatic discharge (ESD) occurs particularly in the autumn and winter. Radio frequency interference (RFI) can occur near radio and TV stations, radar installations, airports, and other locations as well. Poor grounding can cause problems of its own, and can aggravate other problems like ESD and RFI.

Electrostatic discharge

Static electricity discharge is a major contributor to EMI problems, especially in the fall when the humidity begins to drop. This includes lightning, discharge from the human body and furniture discharge. The higher moisture content of the atmosphere in the summertime helps to drain away static charges almost as quickly as they accumulate. In the autumn and winter, however, the humidity drops and the static charges tend to build to very high levels.

When you touch a something metallic, you the charge which has accumulated on your body can discharge, caus-

ing a spark, a slightly audible zap, and a stinging, tingling sensation.

Electrostatic charges are created when two dissimilar materials are separated. As you probably remember from youthful experiments, you can accumulate a static charge by walking across a carpet on a dry day. The static charge accumulated is not noticeable until it is discharged to another object—usually a door knob or the computer—with the crackle of a spark which causes an unpleasant jolt.

ESD can cause a computer to crash in many ways. You may find that your computer just hangs. You may experience parity errors or Trap errors. The symptoms will vary and the true source of the problem will be very difficult to determine.

Static discharged from your body is probably the least common source of computer problems. The charges accumulated are just not that high. The real culprit is your chair. A charge of up to 10,000 volts is generated when you get up out of the chair—remember the separation of dissimilar materials. The charge is retained by the chair because the casters on most chairs are rubber or plastic, both of which are nearly perfect insulators. When the chair touches or comes in close proximity to the desk or cart on which your computer sits, the resultant electrostatic discharge can and frequently does disrupt its operation.

Simple prevention

There are a couple things you can do to prevent ESD. You can also take steps to ensure that when ESD does occur, the results are as harmless as possible.

The least expensive way to reduce ESD is to prevent the buildup of static charges. The best way to do this is to keep the relative humidity in the computer room between 45% and 70%. A relative humidity of 50% to 60% is ideal. In that range, the static charge drains away via the moisture in the air quickly, enough so that it does not build to a level high enough to discharge.

Another way to prevent static buildup, particularly on your chair, is to use special static draining carpet and chairs with casters which are designed to drain static to the floor and from there to the ground. This is obviously a more expensive solution. It may be necessary, however, to use this approach in buildings or offices in which there is no control over the relative humidity.

RFI sources

Nearby radio and TV stations can generate powerful electromagnetic signals. These signals propagate through the air

and can be picked up by a computer. The cables attached to a computer and to peripheral devices can act as excellent antennae. The keyboard cable, the printer cable, the cables to modems and other external devices all pick up the radiated signals from radio and TV stations. If your system is located close enough to one, you may experience problems.

Powerful radar sources can also affect your system. An airport or air station can be the source of ground-based radar as well as aircraft radars and other radio signals. These radar signals can be powerful and can cause problems similar to those caused by radio and TV signals. The system entry points are cables, which act as antennae for radar signals. Microwave relay towers and cellular phones and their relay towers can cause RFI problems with computers, too.

You can't prevent RFI problems entirely—especially if you're located next to a radar installation—but the problems can be minimized by taking certain simple precautions.

One common set of entry points for radiated RFI is loose system covers and missing card slot covers. These covers may have been left off after removing a card from the system. Be sure to always replace them. Install the covers on your system unit or attached peripheral devices, if you currently have them off. Fasten them down securely with the latches or screws provided. A missing or improperly installed system cover allows significant RFI entry into the system.

Another common RFI entry point are the cables that connect the various external peripherals to the system. These cables act as antennae and can pick up radio frequency signals and transmit them inside the system where they can cause problems. To reduce RFI cable pickup, ensure that each cable connector is seated properly in its receptacle at both ends of the cable and that the fasteners are properly installed and in use. If screws hold the connector in

place, ensure that they are tightened snugly. Where wire retaining clips are used, ensure that they are properly seated and latched.

For printer cables that have separate ground wires, you should connect the ground wire to the screw or fastener provided on one end only. Connecting the ground wires on both ends can cause ground loop currents to flow that defeat the purpose of the ground wire. In the case of cables like this, the ground wire is used for shielding, and it makes its connection to the ground reference through the frame of the printer.

Magnetic fields

The magnetic field from a computer monitor or other electrical device can create problems, too. When located on top of a desktop computer system, the magnetic fields emanating from a display monitor can interfere with the ability of the system to read data from the diskette drive. This type of problem can show up as CRC errors or disk read errors.

These problems can be reduced or eliminated by moving the monitor away from the system. In some cases, adding a display stand to a monitor which does not have one reduces the strength of the magnetic field enough to eliminate the problem.

Check the ground

Most new homes and office buildings have adequate grounding for the proper operation of a personal computer system, but older homes and offices may not. Even when a building is relatively new, there still may be problems such as loose connections and missing connections that increase the susceptibility of the system to RFI problems. If you even suspect an EMI problem, check the ground! Computers are much more susceptible to the effects of ESD and RFI when they are improperly grounded. A quick check of your computer's ground can be accomplished with a simple electrical outlet ground checker available at most hardware or electrical supply stores. Even if the

ground checks good, however, you could still have a grounding problem which can aggravate the effects of ESD.

The ideal ground wire installation is an insulated green wire at least the same size as the wires which supply the power to the outlet. The wire should connect only to a one inch diameter copper stake driven at least ten feet into moist earth or to an equivalent copper water pipe. It should not connect to any other wire or bus at any point along its length. The connection to the ground stake should be made at a point no greater than twelve inches from the entry into the earth, and should be as close as possible to the earth.

Proper grounding is not difficult to achieve, but it can be expensive. You should definitely call a trained electrician to deal with this type of problem. Do not attempt to work on the electrical system of your home, office, or building yourself. It can kill you.

Bothering your neighbors

If you have problems which no one can seem to fix, check the relative humidity and the grounding of your computer. It would also be wise to consult with someone who specializes in resolving electromagnetic environmental problems.

All of the problems which EMI can cause for you and your computer system can also be caused by your computer. EMI works both ways. Not only is it necessary to keep unwanted EMI out of your computer, it is also necessary to keep your computer from radiating unwanted noise to other appliances or electronic devices. The same precautions which you took to prevent EMI from entering your system will help prevent EMI from leaving your system. ☺

Drawing conclusions about DrawIt

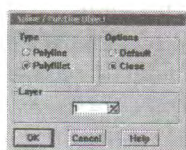
by Craig Greenwood

DrawIt is an inexpensive vector drawing program with an extensive feature list for such an inexpensive program. I've been using DrawIt for the last several months, and I like it. With some practice, you may find it useful for many, if not most, of your own drawing needs.

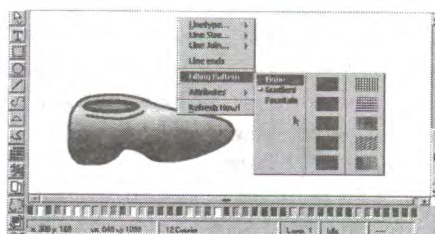
Tool set

DrawIt's toolbar is along the left side of the application's window, with most of the standard drawing tools: text, parallelogram, circle, line, polyline, etc.

One noteworthy tool is the Regular Polystar tool. As the name implies, this creates a multiply-pointed star with a user selectable number of points, up to 48. Once you create a polystar, vertexes can be deleted, added and moved. While the nodes can be moved, they do not have the two additional handles that enable you to adjust the angle or intensity of the curves. Double-clicking on the object opens a properties dialog which allows you to select between a polyline object (straight lined) or a pollyfillet object (curved lines).



DrawIt does follow the OS/2 rules. When you double-click on almost any object, DrawIt brings up the appropriate window describing the object and allowing you to change settings for that object. For example, you can specify to which one of the ten available layers you want to assign that object.



Right clicking on the lines, circles, other objects you've drawn brings up a standard menu list, which includes items for customizing lines or outlines, and filling options. In the accompanying screenshot, I attempted to convert the modified polystar into a classic wooden shoe. Note the gradient fill, which was very simple to specify. Other fill options include solid colors, nine background patterns, and a fountain fill (which creates a transition fill from one color to another).

At the bottom of the application window is a color bar that displays a selection of about 40 colors. You can left-click on any of these colors to assign it to the selected object's background color, and right-click on one to make it the selected object's border color. Double-clicking brings up a window for changing its RGB value.

DrawIt lets you create text using one of two tools: one for editable text, and one for non-editable text. Editable text is created in a text frame; it can have a border and a background color or effect. Non-editable text objects can have their attributes modified, but the text can't be changed after the object is created.

A couple of the nifty features of the non-editable text are the ability to format it in a circle and fill it with a fountain fill. You can also adjust the height and width of the characters, adjust the shear angle (like italics), and create a shadow.



DrawIt can import the following graphic file formats: PCX, GIF, BMP (OS/2 1.x, 2.x and MS Windows 3.0), TIFF, XBM (an X Window bitmap format), TARGA, PIC, WMF, and JPEG.

Drawbacks

While I like this program plenty, I do have a few criticisms.

Many of DrawIt's capabilities are not intuitively obvious. However, with some exploring and referring to the help file, before long you do get the hang of using it.

After creating a text object, I have been unable to change font size. Sometimes the font size drop-down box won't even drop down.

The fountain fill feature is a bit slow. Whenever the screen redraws, such as when you scroll around the page, the fill is regenerated. This process commandeers the processor and makes further drawing extremely impractical.

DrawIt doesn't have even a single level of Undo. On more than one occasion I have accidentally deleted the wrong object, with great remorse. Undo would be very useful for trying a setting to see how the result looks.

Bottom Line

DrawIt is quite useful for tossing together quick diagrams for Web graphics, or to include in WordPro or Papyrus documents. And, while I have not attempted to describe all of the features, I think you can get a feel for how much it can do.

DrawIt's capabilities are even more amazing when you consider its small size. The .EXE is just over 1 MB, and all the distributed files fit on a floppy disk with room to spare for one of its typical data files.

If you think you might have a use for a basic drawing program, I recommend that you download the trial version of DrawIt, and give it a try. ☺

DrawIt 3.2

\$25.00, \$10.00 upgrade
(shareware)

Available from BMT Micro
www.bmtmicro.com/catalog/drawit.html

Nothing Ordinary about this

by Esther Schindler

When Achim Hasenmüller, Patrick Haller, and other members of the Odin team gave their presentation at WarpTech, the room was standing room only. Everyone wanted to see how well Odin could run applications written for Windows 9x and Windows NT. Everyone was simply blown away. So we thought it would be an appropriate topic for the September general meeting of the Phoenix OS/2 Society—especially after our long summer break.

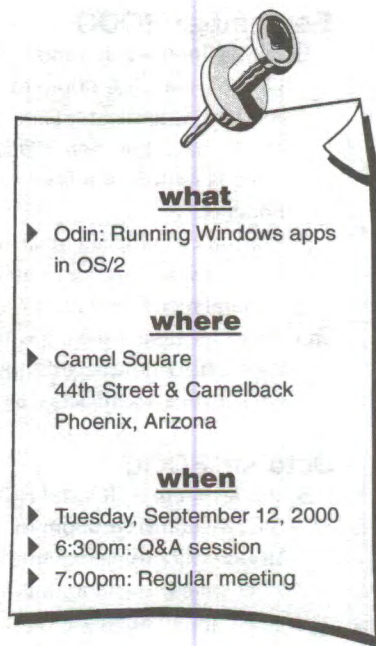
Plan to join us on Tuesday, September 12, as Bill Schindler (and any other Odin experimenters he can arm-twist into helping) demonstrate how to get Odin working, and show what it's capable of.

What's Odin do?

Odin enables 32-bit Windows applications to run in OS/2. The technology, which borrows heavily from WINE (Windows on Linux), and the Open32 libraries developed jointly by IBM and Lotus (back when they were separate companies) does not rely on a virtual machine. Such solutions (like Connectix's Virtual PC on the Macintosh or WinOS2 under OS/2) run the Windows operating system, with all its license, support and memory requirements. Odin runs a Windows application by converting the EXE and DLL files into OS/2's format, executing the application as a native OS/2 program.

Windows isn't running. Source code isn't necessary. Instead, the Windows APIs are replicated by Odin's conversion tools, and the API calls are mapped to the OS/2 equivalents.

The Odin job isn't complete. Currently, each converted application needs some hand tuning, depending on the number of not previously encountered APIs that the team has to cope with. But the Odin Project has made several Windows apps work adequately to well inside OS/2, from RealAudio to Quake to the Lotus Notes R5 client. Microsoft Word works... for a couple of minutes, anyway. That's not bad, considering that all the work has been accomplished



by a couple of dozen volunteers working on the open-source project in their spare time.

That business model is currently changing. The core team of the Odin Project is beginning to work with large corporations who need to run one or two enterprise Windows applications. If Odin can run those applications under OS/2, those corporations can avoid costly operating-system migrations. Plus, the consulting fees will fund further community development.

When and where

The meeting will be held Tuesday, September 12. We'll be back at our usual haunt at Camel Square (see the map in the center section). The Q&A session will get underway at 6:30pm; the formal meeting (well, as formal as we get) will start at 7:00pm. ☺

Joining the discussion

The Phoenix OS/2 Society runs a private unmoderated email discussion list. In the 20 to 40 messages posted daily, OS/2 users discuss the best brands to buy, help one another debug a technical problem, and occasionally discuss the computing community of which OS/2 is a part.

To join the list, fill out the form at www.possi.org/lists.html.

While there's no requirement that participants be a member of the Society, it's generally expected that the people who use the service will support it financially. ☺

Coming events

A list of events scheduled by the Phoenix OS/2 Society and other OS/2 user groups.

September 2000

- 5** net.sig (Internet SIG) and HOW GIG. Meeting is 6:00pm to 8:00pm. Coordinator Sam MacDonald. Location: KDC, 2999 N 44th St, 4th floor, Phoenix.
- | September | | | | | | |
|-----------|----|----|----|----|----|-----|
| S | M | T | W | T | F | S |
| | | | | | | 1 2 |
| 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| 24 | 25 | 26 | 27 | 28 | 29 | 30 |
- 9** Warpstock in Philadelphia. See www.warpstock.org for more information.
- 12** General meeting: Putting Odin to work.
- 30** Board meeting. Meeting is 10:00am to 1:00pm. Location: Dick Krueger's house in Chandler. Send an email to president@possi.org for directions.

October 2000

- 3** net.sig (Internet SIG) and HOW GIG. Meeting is 6:00pm to 8:00pm. Coordinator Sam MacDonald. Location: KDC, 2999 N 44th St, 4th floor, Phoenix.
- | October | | | | | | |
|---------|----|----|----|----|----|----|
| S | M | T | W | T | F | S |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| 29 | 30 | 31 | | | | |
- 5** Magazine submission deadline for October/November issue. Articles should be sent to editor@possi.org. For other arrangements, call 480-585-5852.
- 10** General meeting.
- 13** Warpstock Europe, Karlsruhe, Germany. See www.warpstock.de for more information.
- 28** Board meeting. Meeting is 10:00am to 1:00pm. Location: Bill Teags' house in Cave Creek. Send an email to wteags@xpackage.com for directions.

November 2000

- 7** net.sig (Internet SIG) and HOW GIG. Meeting is 6:00pm to 8:00pm. Coordinator Sam MacDonald. Location: KDC, 2999 N 44th St, 4th floor, Phoenix.
- | November | | | | | | |
|----------|----|----|----|----|----|-----|
| S | M | T | W | T | F | S |
| | | | | 1 | 2 | 3 4 |
| 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| 26 | 27 | 28 | 29 | 30 | | |
- 14** General meeting.
- 25** Board meeting. Meeting is 10:00am to 1:00pm. Location: Bill & Esther Schindler's house in north Scottsdale. Send and email to esther@bitranch.com for directions.

December 2000

- 5** net.sig (Internet SIG) and HOW GIG. Meeting is 6:00pm to 8:00pm. Coordinator Sam MacDonald. Location: KDC, 2999 N 44th St, 4th floor, Phoenix.
- | December | | | | | | |
|----------|----|----|----|----|----|-----|
| S | M | T | W | T | F | S |
| | | | | | | 1 2 |
| 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| | | | | | | 31 |
- 5** Magazine submission deadline for December/January issue. Articles should be sent to editor@possi.org. For other arrangements, call 480-585-5852.
- 12** General meeting.
- 23** Board meeting.

January 2001

- 2** net.sig (Internet SIG) and HOW GIG. Meeting is 6:00pm to 8:00pm. Coordinator Sam MacDonald. Location: KDC, 2999 N 44th St, 4th floor, Phoenix.
- | January | | | | | | |
|---------|----|----|----|----|----|-------------|
| S | M | T | W | T | F | S |
| | | | | | | 1 2 3 4 5 6 |
| 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| 28 | 29 | 30 | 31 | | | |
- 9** General meeting.
- 27** Board meeting.

February 2001

- 5** Magazine submission deadline for February/March issue. Articles should be sent to editor@possi.org. For other arrangements, call 480-585-5852.
- 6** net.sig (Internet SIG) and HOW GIG. Meeting is 6:00pm to 8:00pm. Coordinator Sam MacDonald. Location: KDC, 2999 N 44th St, 4th floor, Phoenix.
- | February | | | | | | |
|----------|----|----|----|----|----|-------|
| S | M | T | W | T | F | S |
| | | | | | | 1 2 3 |
| 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| 25 | 26 | 27 | 28 | | | |
- 13** General meeting.
- 24** Board meeting.

March 2001

- 6** net.sig (Internet SIG) and HOW GIG. Meeting is 6:00pm to 8:00pm. Coordinator Sam MacDonald. Location: KDC, 2999 N 44th St, 4th floor, Phoenix.
- | March | | | | | | |
|-------|----|----|----|----|----|-------|
| S | M | T | W | T | F | S |
| | | | | | | 1 2 3 |
| 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| 25 | 26 | 27 | 28 | 29 | 30 | 31 |
- 13** General meeting.
- 24** Board meeting.

Meeting locations

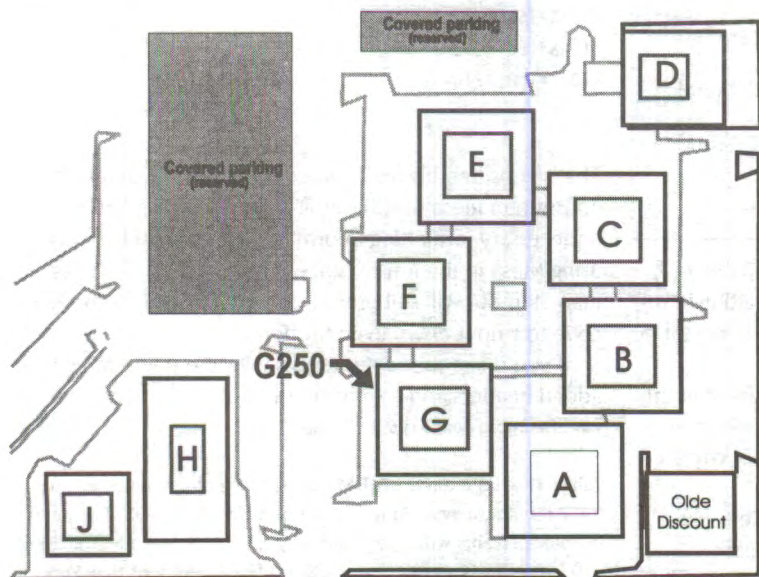
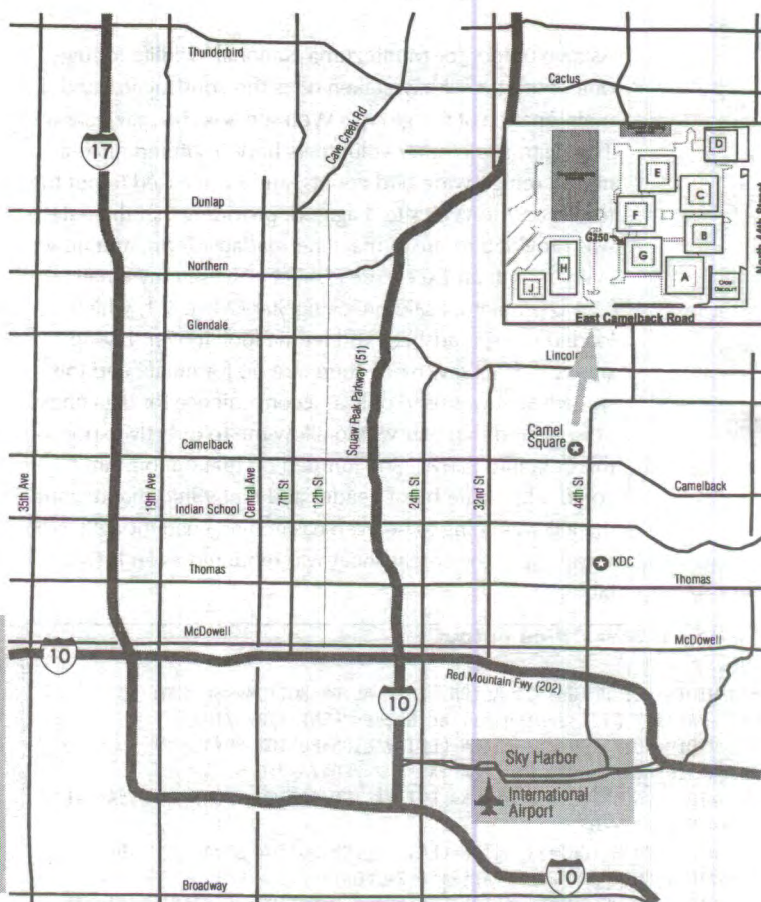
Directions to meeting locations.

General meetings are held at the Camel Square office complex, Room G250, 44th Street and Camelback (northwest corner), Phoenix.

From the Red Mountain Freeway (202), exit at 44th Street and go north $3\frac{1}{2}$ miles. From the Squaw Peak (51), exit at Colter (southbound) or Highland (northbound); follow signs to Camelback Rd and go east $3\frac{1}{2}$ miles.

The "How OS/2 Works General Interest Group" and the Internet SIG (net.sig) meet at Knowledge Development Center, 2999 N 44th St, Suite 400. That's just north of Thomas, in the building with the green dome. Plenty of free parking is available in the garage behind the building. ☺

If the mailing label on the back cover says "sample" then this may be the only copy of extended attributes that you will ever receive. If you want to keep getting the magazine (and receive all the other benefits of membership), you must join! A 12 month membership in the USA is only \$30. (See the form for membership pricing in other areas.) Tear out the application, fill it in, and mail it with your membership fee today!



North 44th Street

A map of Camel Square, the new location for the Society's monthly general meeting. We will be meeting in room G250. You may park anywhere except in the reserved (covered) parking spaces.

East Camelback Road

Now starring: HTML bloat

Cleaning up after Star's HTML export

by Julian Thomas

As a volunteer for Montezuma National Wildlife Refuge, one of the tasks I have taken on is the construction and maintenance of the group's Web site (www.fws.gov/r5mnwr). This year, some other volunteers have instituted once-a-month refuge-wide bird counts, and I was asked to put the results on the Web site. I agreed, providing that the data was provided to me in machine-readable form, and now every month an Excel spreadsheet arrives in my email.

No problem, I said, invoking Star Office 5.1, which loaded the spreadsheet and let me look it over. Listing 1 shows the first few rows; there are no formulae, and the spreadsheet was used only as a convenience for data entry. I discovered that Star would allow me to directly export this data into HTML, so I jumped on that option. Ah! I could add a little bit of header and trailer information, and the job was going to be even easier than I had thought. Not surprisingly, the spreadsheet was rendered as an HTML table.

Listing 1. Star Office output

```
<TR>
<TD WIDTH=401 HEIGHT=21 ALIGN=LEFT VALIGN=BOTTOM><B><FONT
FACE="Arial" SIZE=3>Pied-billed Grebe</FONT></B></TD>
<TD WIDTH=90 HEIGHT=21 ALIGN=LEFT VALIGN=BOTTOM SDVAL="2"
SDNUM="1033;"><FONT FACE="Arial"> 2</FONT></TD>
<TD WIDTH=76 HEIGHT=21 ALIGN=LEFT VALIGN=BOTTOM><FONT FACE="Arial">
<BR></FONT></TD>
<TD WIDTH=79 HEIGHT=21 ALIGN=LEFT VALIGN=BOTTOM SDVAL="2" SD-
NUM="1033;"><FONT FACE="Arial"> 2</FONT></TD>
<TD WIDTH=79 HEIGHT=21 ALIGN=LEFT VALIGN=BOTTOM><FONT FACE="Arial">
<BR></FONT></TD>
<TD WIDTH=79 HEIGHT=21 ALIGN=LEFT VALIGN=BOTTOM><FONT FACE="Arial">
<BR></FONT></TD>
<TD WIDTH=79 HEIGHT=21 ALIGN=LEFT VALIGN=BOTTOM><FONT FACE="Arial">
<BR></FONT></TD>
<TD WIDTH=79 HEIGHT=21 ALIGN=LEFT VALIGN=BOTTOM><FONT FACE="Arial">
<BR></FONT></TD>
</TR>
```

Unfortunately, Star insisted on loading each table cell, even the empty ones, with a great deal of formatting information. For instance, here is the first detail line of the table from the HTML file.

Note that if there is any data, it shows up right after the "Arial">. The entire file came to almost 97KB, which is unpleasant to view without a broadband Internet connection.

To reduce the bloat, I whipped up a small Rexx program, `destar.cmd` (see Listing 2). Here's the result:

```
<TD><B>Pied-billed Grebe</B></TD>
```

```
<TD>2</TD>
<TD><BR></TD>
<TD>2</TD>
<TD><BR></TD>
<TD><BR></TD>
<TD><BR></TD>
<TD><BR></TD>
</TR>
```

The file, after running the program, is down to less than 18KB.

At WarpTech, I mentioned this issue at the Sundial booth. Carla Hanzlik observed that Star was probably working very hard to reproduce the original formatting information, and suggested that I try the same thing with my brand new copy of Mesa2. The same line, as exported to HTML by Mesa looks like this:

```
<TR VALIGN=bottom ALIGN=left>
<TD>&#160;</TD>
<TD nowrap><FONT color=#000000>
<B>Pied-billed Grebe</B></FONT></TD>
<TD ALIGN=right VALIGN=top nowrap>
<FONT color=#000000>2</FONT></TD>
<TD>&#160;</TD>
<TD ALIGN=right VALIGN=top nowrap>
<FONT color=#000000>2</FONT></TD>
<TD>&#160;</TD>
<TD>&#160;</TD>
<TD>&#160;</TD>
<TD>&#160;</TD>
</TR>
```

That's considerably less bloated than the Star output (the `output.htm` file is 43KB), but it still contains essentially unnecessary formatting information. I'll probably switch to using Mesa in the future, since it loads dramatically faster than Star, but will still process the output using some Rexx code to strip it down even further.

If you'd like to see the results with the entire table (I've added headers and a small amount of text), it's at www.fws.gov/monthly6.html. ☺

Julian Thomas is a retired IBM engineer and programmer who uses OS/2 for almost everything and is a member of the POSSI board of directors. He, his wife Mary Jane, and Matinicus (a red Maine Coon cat) live in the beautiful Finger Lakes Wine Country of New York State.

Listing 2. Destar.CMD

```
/* destar.CMD: strip bloat from star office html; jt didit Apr 2000 */
call RxFuncAdd 'SysLoadFuncs','RexxUtil','SysLoadFuncs'
call SysLoadFuncs
tempout=temp$star
parse arg infile outfile .
if infile='' then do
  do while queued()>0
    pull junk
  end
  say ' destar.cmd. Copies infile to outfile and removes'
  say ' bloat from star-generated html table data lines'
  say ' If only one argument, file is replaced with processed version'
  say ' syntax is DESTAR infile [outfile]'
  exit
end
if outfile = '' then outfile=tempout
say ' Converting' infile 'to' outfile
c=stream(infile,'C','OPEN READ')
c=SysFileDelete(outfile)
c=stream(outfile,'C','OPEN WRITE')
do forever while lines(infile)>0
  lin=linein(infile)
  lin=strip(lin,'L','09"x')
  lin=strip(lin)
  parse var lin first rest
  if first="<TD" then lin=fixlin(lin)
  call lineout outfile,lin
end
xx=lineout(infile)
xx=lineout(outfile)
if outfile=tempout then do
  say 'Copying' outfile 'to' infile
  'copy' outfile infile
  call SysFileDelete outfile
end
exit

fixlin: PROCEDURE
  parse arg td rest
  stop=pos('>',rest)
  work=td||'|>'||substr(rest,stop+1)
  z= pos('<FONT',work)
  if z>0 then do
    work2=left(work,z-1)
    zz=pos('>',work,z)
    work=work2||substr(work,zz+1)
    zz=pos('</FONT>',work)
    if zz>0 then
      work = left(work,zz-1)||substr(work,zz+7)
    end /* font handling */
  end
  return work
end
```

THE

OS/2 SUPERSITE

<http://www.os2ss.com>

- Over 2 gigabytes of OS/2 shareware and freeware
- Mailing lists such as OS2USER and WarpCast
- Home of several popular OS/2 web sites such as OS/2 e-Zine!, EDM/2, OS/2 Connect, Loren Bandiera's OS/2 News and Rumors Page, and Timur Tabi's New OS/2 User page.
- The OS/2 Discussion Forum
- Online shareware registration and commercial software purchasing

Join the Supersite Members Club

Club members get special deals on commercial software and \$2.50 off every shareware application they register through BMT Micro. Members also get FTP access to the Supersite archive and space for their personal web page. See <http://www.os2ss.com/club/> for details.

Objecting to databases

Part 4: Flirting with the unknown

by Bill Schindler, bill@bitranch.com

In this article, we'll "punch a hole through" the code to make the database access classes work according to the design that was shown originally in the first article in this series. "Punching a hole" through means implementing enough code to make a program work front-to-back. The bells, whistles, and complete functionality are added later.

If you missed the earlier articles, I hope to have the code online within the next month.

Don't column us

In order to "punch the hole" through, two additional classes are needed. The first class, `Column`, encapsulates the definition of a column (or field) in the database.

Since I'm the quintessential lazy programmer, I hate having to update class definitions every time the database changes. So, rather than making the consumer of the `Column` class build a new definition each time the database changes, the `Column` class can dynamically gather its information from the database. Just to cover the possibilities, the column definition can also be set "manually."

Since most databases have their own proprietary methods for querying column and table definitions, the `Column` class is somewhat database specific. (This example works with MySQL.)

The `Column` class tracks the column specific information by storing the data in a `Directory` (see lines 11–20 in the code listing). The most commonly used information is the name of the column. Since different databases use different names for the column name, the `Column` class hides this minor complexity by providing a `columnName` method (lines 24–26).

Notice that `Column` includes a class method (line 56 in the listing) named `columnsForTable`. This is a worker method that queries the database for column definitions and returns an array of `Column` objects. This method is used internally by the `SQLTable` class (described next) to dynamically determine the columns in a table.

What a table

The second new class is `SQLTable`. In a database, a table is a collection of columns. `SQLTable` mimics this by maintaining a collection of `Column` objects.

`SQLTable`'s `init` method is where most of the heavy lifting happens. The class maintains lots of internal values (many of which are not used yet) and it takes some initialization work to get everything set up. This is almost always true of any class that tries to build and maintain most of its state information dynamically.

The two parameters that are required by `init` are the `Database` object and the name of the table (line 84). The remaining arguments are optional, since they're used for explicitly setting up column definitions.

In lines 86–89, several key values are initialized. The `!stmt` tracks the statement ID returned by `Database`. The `!tablename` is a copy of the table name, maintained because some databases use two different forms of the table name. The `!select` stores the SQL select statement—its value is built up when the `Column` object array is created. Finally, `!id` is used to store the values retrieved from the current row of data when the database is being accessed.

The array of `Column` objects is retrieved through a call to `.column-columnsForTable` (line 108). From there, `!id` and `!select` are fully initialized.

Although about half of `SQLTable`'s code is involved in setting up the collection of columns, most of `SQLTable`'s interface is concerned with accessing the database. This includes the `first` and `next` methods and column access methods.

If you've looked at the code listing, you're probably wondering where the column access methods are. Well, those are all unknown....

Into the unknown

Sometimes, you'd like to be able to design classes that can be extended without writing lots of — or any — new code. These "self-extending" classes are almost impossible to do in C++ or Java, but `Object Rexx` makes the job fairly simple.

Every class in `Object Rexx` has a method named "unknown." The `unknown` method gets called whenever a non-existent (i.e. `unknown`) method is called on a class. The default job of the `unknown` method is to generate an error message. You can define your own `unknown` method for a class and use it to do whatever special processing you need.

The most common use of `unknown` is to dynamically add methods to a class. In this capacity, `unknown` stands in for attributes—methods used to get and set values stored by the class.

By creating an `unknown` method for `SQLTable`, we avoid any need to define one-off classes for every table in the database.

Look at the `unknown` method in the code listing on lines 123–138. On line 125, you'll see that the parameters passed to the method are the message name (`msgname`) and any arguments for the message (`msgargs`). Since `SQLTable` is

designed to act like a Directory, it allows the columns to be accessed using either square brackets (e.g. myTable['FIRSTNAME']) or as if the column name was defined as a method on SQLTable (e.g. myTable-firstname). The unknown method implements both access methods by examining the message name.

On line 126, the code attempts to get the column name that's being requested. This works when the access is via the twiddle (the method call version). When it's being accessed with square brackets, the name is stored in the message arguments. In that case, the code in lines 128-131 get the name, depending on whether this is a get or a set request.

Once the column name is retrieved, the code determines if this is an assignment (line 133) by checking the rightmost character of the message name. If that character is an equal sign ("="), it's an assignment. Otherwise, it's a get request. Data is then either stored in or retrieved from SQLTable's internally maintained Directory !d.

The Column class also has an unknown method. This method is used for setting and accessing the database specific information stored in Column. Its main purpose is to simplify modifying Column for use with other databases.

Making the doughnuts

To wrap things up, here's an example of the database classes in action:

```
/* Database access example */
```

```
db = .database-new("warptech")
names = .sqlTable-new(db, "AssocPerson", .nil, .nil)
ok = names-first
DO WHILE ok
  .output-lineout(names-firstname names-lastname)
  ok = names-next
END
RETURN 0
```

```
::requires "Database.rxx"
```

That's all the code needed to generate a list of names from the WarpTech database! (You won't be able to run this code as-is, since you don't have access to the WarpTech database.)

From here, you can add functionality to make these classes even more powerful. Add set/get methods for SQLTable's !where and !order in order to control what rows are selected and how the result is sorted. You might also add a count method or a method to retrieve all selected rows into an array rather than processing them one at a time.

From here, it's yours. Enjoy! ☺

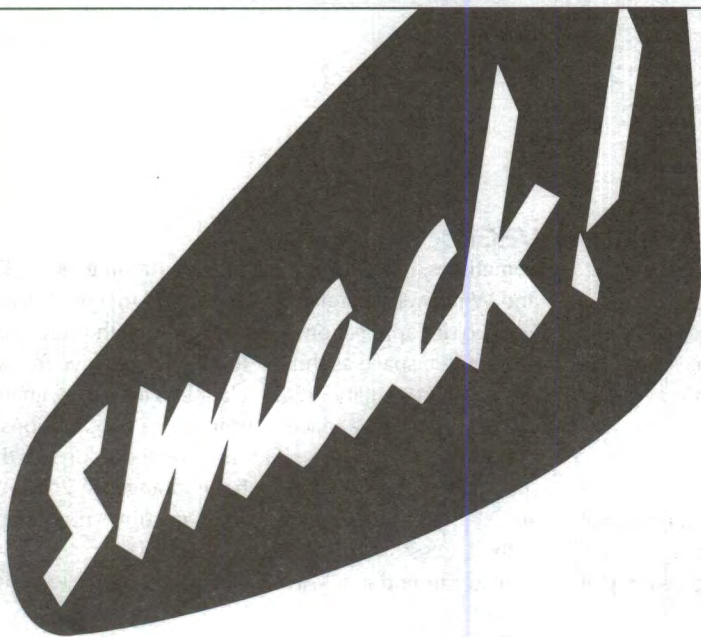
```
1: /***** Column *****/
2: */
3: ::class Column PUBLIC
4:
5: /*===== init =====
6: */
7: ::method init
8:   EXPOSE !info
9:   USE ARG tabname, colname
10:
11:   !info = .directory-new
12:   !info['TABNAME'] = tabname
13:   !info['FIELD'] = colname
14:   !info['TYPE'] = ''
15:   !info['LENGTH'] = ''
16:   !info['SCALE'] = ''
17:   !info['DEFAULT'] = ''
18:   !info['NULL'] = ''
19:   !info['KEY'] = ''
20:   !info['EXTRA'] = ''
21:
22: /*===== colname =====
23: */
24: ::method colname
25:   EXPOSE !info
26:   RETURN !info-field
27:
28: /*===== unknown =====
29: */
30: ::method unknown
31:   EXPOSE !info
32:   USE ARG msgname, msgargs
33:   isAssign = (msgname-right(1) = '=')
34:   PARSE VAR msgname msg '='
35:   IF isAssign THEN
36:     DO
37:       IF msgname = '[]' THEN
38:         DO
39:           IF msgargs[2] = 'TYPE' THEN
40:             self-type = msgargs[1]
41:           ELSE
42:             !info[msgargs[2]] = msgargs[1]
43:           END
44:         ELSE
45:           DO
46:             !info[msg] = msgargs[1]
47:           END
48:         END
49:       ELSE IF !info-hasIndex(msgname) THEN
50:         RETURN !info[msgname]
51:       ELSE
52:         RETURN msg
53:
54: /*===== columnsForTable =====
55: */
56: ::method columnsForTable CLASS
57:   USE ARG !db, tabname
```



```

58:
59: s = "SHOW COLUMNS FROM" !db-dbname || '.' || tablename
60:
61: inf = .directory-new
62: cols = .array-new
63: !db-openCursor(s)
64: DO i = 1 WHILE !db-fetch(inf)
65:   cols[i] = .column-new(tabname, inf-field)
66:   DO n OVER inf
67:     cols[i][n] = inf[n]
68:     inf[n] = ''
69:   END
70: END
71: !db-closeCursor
72:
73: RETURN cols
74:
75: /***** SQLTable *****/
76: */
77: ::class SQLTable PUBLIC
78:
79: /*===== init =====*/
80: */
81: ::method init
82: EXPOSE !db !select !tbl !key !tablename !d !cols !order ,
83:   !where !stmt
84: USE ARG !db, !tbl, !c, !key
85:
86: !stmt = ''
87: !tablename = !tbl
88: !select = 'SELECT'
89: !d = .directory-new
90: delim = ''
91:
92: IF !c <> .nil THEN
93: DO
94:   i = 1
95:   !cols = .array-new
96:   DO n OVER !c
97:     colNm = n-word(1)
98:     !cols[i] = .column-new(!tablename, colNm)
99:     !cols[i]-definition = n
100:    !d[colNm-translate] = ''
101:    !select = !select || delim || colNm
102:    delim = ', '
103:    i = i + 1
104:  END
105: END
106: ELSE
107: DO
108:   !cols = .column-columnsForTable(!db, !tablename)
109:   DO i = 1 TO !cols-items
110:     colNm = !cols[i]-field
111:     !d[colNm-translate] = ''
112:     !select = !select || delim || colNm
113:     delim = ', '
114:   END
115: END
116:
117: !select = !select 'FROM' !tbl
118: !where = ''
119: !order = ''
120:
121: /*===== unknown =====*/
122: */
123: ::method unknown
124: EXPOSE !d
125: USE ARG msgname, msgargs
126: PARSE VAR msgname msg '=' .
127:
128: IF msgname = '[]' THEN
129:   msg = msgargs[1]
130: ELSE IF msgname = '[]=' THEN
131:   msg = msgargs[2]
132:
133: IF msgname-right(1) = '=' THEN
134:   !d[msg] = msgargs[1]
135: ELSE IF !d-hasIndex(msg) THEN
136:   RETURN !d[msg]
137: ELSE
138:   RETURN msg
139:
140: /*===== first =====*/
141: */
142: ::method first
143: EXPOSE !db !d !select !where !order !stmt
144: DO n OVER !d
145:   !d[n] = ''
146: END
147: IF !stmt <> '' THEN
148:   !db-closeCursor(!stmt)
149:   !stmt = .database-statementID
150:   !db-openCursor(!select !where !order, !stmt)
151:   v = !db-fetch(self, !stmt)
152:   RETURN v
153:
154: /*===== next =====*/
155: */
156: ::method next
157: EXPOSE !db !d !stmt
158: DO n OVER !d
159:   !d[n] = ''
160: END
161: IF !stmt = '' THEN
162:   RETURN .false
163: v = !db-fetch(self, !stmt)
164: IF \ v THEN
165: DO
166:   !db-closeCursor(!stmt)
167:   !stmt = ''
168: END
169: RETURN v

```

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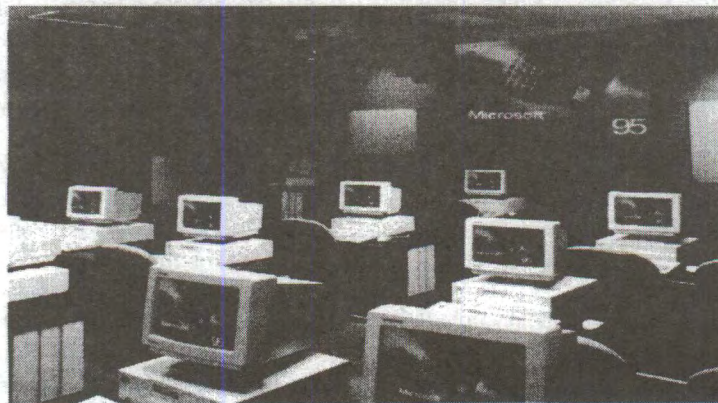
The labeling program for OS/2

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New and improved

compiled by Esther Schindler

Oh, it's the lazy, hazy, slow days of summer... when it's difficult to concentrate on something as mundane as user group magazines.

Fortunately, the OS/2 developers haven't been quite so laid back. There's a decent haul this time, from several commercial updates to a few new services that may be of interest.

WorkSpace On Demand 3.0

IBM announced WorkSpace On-Demand 3.0, a cross-platform IT solution that provides server-based management for a broad range of client hardware, operating system platforms, and applications.

WorkSpace On-Demand 3.0 helps customers address critical IT management needs arising from the industry's rapid adoption of network computing and e-business:

- **Centralized client desktop management and control:** WorkSpace On-Demand 3.0 features a restricted user desktop that allows administrators to select and control which applications are available to users and add new applications when they are needed.
- **Easy deployment and maintenance of software:** network managers can deploy software and make software updates directly and instantly accessible to client users from the server.
- **Low cost of ownership:** WorkSpace On-Demand 3.0 protects investments because it is compatible with both personal computers and network computers, and can manage a mixed set of clients including OS/2 and Windows.
- **Broad access to servers:** end users can log on from any client on the network, so if client hardware fails the IT manager can plug in new hardware, and if software fails, a new copy can be downloaded from the server. Restoring the system is easy and user downtime is minimized.

WorkSpace On-Demand 3.0 is available for order immediately; the Windows NT server version began shipment in July and the Windows 2000 server version will ship at the end of October. More information can be found at www.ibm.com/software/workspace.

SmartSuite update

IBM released Lotus SmartSuite for OS/2 Warp 4 Release 1.5.1. You'll need to download the 29 MB file to update an existing 1.5 installation. The new version contains improved Microsoft Office filters and various fixes. Find it at www.lotus.com/support.

V2GB

Sometimes, OS/2 users have trouble running legacy DOS and Windows programs on OS/2 with large hard disks. Some older applications interpret disks with more than 2GB of free space as though they have negative free space.

A new free utility, V2GB, claims to fix this by limiting the amount of free space returned when applications query the disk status. No files are created to use up the space; it's just the reporting that is changed. V2GB.SYS is an OS/2 virtual device driver, so it occupies no real space in the DOS session.

You can find it at www.tavi.co.uk/os2pages/v2gb.html.

InCharge accounting

The InCharge accounting program has been updated. Registered users can download version 1.02.67 from www.spitfiresoftware.com.

This version enhances multiple currency features and provides easy connection to the company's online user support forum.

As a new service, Spitfire Software is providing a currency exchange rate table for import into InCharge from its Web site. This table covers 64 different currencies and will be updated every few weeks.

DB2 Universal Database version 7

IBM announced the general availability of DB2 Universal Database Version 7. According to IBM, its integrated in-memory text search can perform high-speed Internet searches as much as ten times faster than typical database queries.

DB2 Universal Database also has enhanced XML support and integrated data warehousing and on-line analytical processing (OLAP) capabilities. Because it provides an integrated data warehousing center and an OLAP starter kit at no additional cost, customers can build data warehouses, analyze data and drive mission-critical applications.

DB2 Universal Database Version 7 is available on OS/2, Unix, and Windows. It's priced at \$359 for the Personal Edition, \$17,500 for the Enterprise Edition, and \$22,500 for the Enterprise-Extended Edition, and is offered on a per processor pricing basis. In addition, DB2 Universal Database Developer's Edition will be offered at \$499, a 50% discount off the standard through December 13.

For more information, see www.ibm.com/software/data/1aunch.

TouchStone diagnostic tools

TouchStone Software Corp. announced CheckIT Portable Edition (PE) pre-boot diagnostic software applications, available through its wholly owned subsidiary, eSupport.com Inc.

CheckIT PE is advanced diagnostic hardware system technology designed to provide pre-boot PC security through a ROM-based implementation. The application is claimed to uncover potential problems as it examines, detects and tests all of the components of a PC system.

CheckIT PE's low-level system analysis interrogates and generates in-depth reports, providing manufacture specific information on hardware detail down to the component level.

The program tests PC subsystems to determine possible sources of system malfunction and to prevent potential data loss. Its comparison functionality allows for the tracking of changes in hardware to assist MIS or IT people in diagnosing system failures.

CheckIT PE is operating system independent. Additional information is available at www.touchstonesoftware.com.

CDR/RW Wizard

CDR/RW Wizard is a graphical interface to CDRECORD/2 for burning discs for CD-R and CD-RW. The new version, CDR/RW Wizard 0.9.91, was just released.

This version has support for bootable CD (via BootWizard 1.0.0) and WPS boot (in VGA mode). Find out more at www.quasarbbs.com/rocco.

UnIMP for OS/2

Serguei Troughelle compiled OS/2 and EMX versions of the UnIMP unpacking utility. UnIMP is useful for unpacking .IMP files, which are created with the IMP archiver for Win32/Dos32. Find it at <http://angryx-peh.nm.ru/soft/unimpos2.zip>.

CopyWave

CopyWave copies parts from an existing PCM-Wav multimedia file into a new Wav file. The free program starts from an indicated place, using an indicated length, and creates a new Wave file.

In version 1.09, you can append a file to existing files. You can find the utility at <http://home.t-online.de/home/C.Arno1d/e>.

IBM call for beta testers

IBM is accepting nominations for the Personal Communications Version 4.3 for OS/2 Warp beta program.

Personal Communications is IBM's family of host access software for PCs. The software, created for specific platforms, provides a set of 5250, 3270, and VT terminal emulation functions over a wide variety of network connections.

Version 4.3 for OS/2 Warp includes:

- Host Access Class Library and Host Access Beans. These standard Java interfaces provide the same programming facilities as IBM's Web-based host access software, Host On-Demand, as well as WebSphere Host Publisher. These interfaces can be used even if host connections are not via TCP/IP.
- SSL Version 3.0 encryption support (including 168-bit encryption). Where permitted, Personal Communications Version 4.3 features enhanced encryption support for secure access to host systems via SSL-capable telnet gateways (such as IBM Communications Server).
- Euro 2 character support.

Participation in the beta program is limited. To be considered, visit www.ibm.com/software/network/pcomm/beta.

NewView

NewView is a replacement for View.exe, the original OS/2 help viewer. NewView has a different user interface: a split window, with the table of contents always visible and changeable colors and fonts. You can copy directly from the file window.

NewView has a "most recently used" files list, a smooth scrolling display, and can go forward as well as backward.

With NewView you can annotate help files, and notes are displayed within the topic.

You should be able to find NewView at Hobbes. It's in Incoming as of this writing but may move to another section by the time you read this.

Xitami Web server

The free OS/2 Web server, Xitami, has been upgraded to GA version 2.4d7. Also, a beta version of 2.5b4 is available. Both can be found at <http://xitami.com>.

Web based payroll

Advantage Payroll Services, a leading payroll and tax services provider which processes \$13 billion annually, introduced Instant Payroll, a Web-based application that allows clients to manage their payroll at their convenience. This new Web-based product eliminates tedious, time-consuming paperwork, phone calls and faxes traditionally required for payroll management. Instant Payroll is meant for entrepreneurs and businesses with less than 200 employees. It is accessible from any personal computer with a Web browser, is easy to use, does not require additional software, is feature rich and has state-of-the-art security.

Instant Payroll provides clients with an unlimited number of earnings and deduction fields, access to flexible labor distribution options, quick paycheck entry, client driven administration of pay codes and deductions, interactive report builder and the ability to manage 401(k) and other employee benefit programs. Processing occurs instantly and a complete payroll statement is available online. Clients may view and print a wide variety of management reports online as well.

More information can be found on the company's Web site, www.advantagepayroll.com.

MIDI Station Sequencer

Christopher Hodges (cdhodge@ibm.net) released MIDI Station Sequencer version 2.2 This version features:

- Support for audio-only projects
- Wave "stretching" in audio track
- Full editing features in piano roll view
- Keyboard accelerators for control of playback and recording

MIDI Station Sequencer 2.2 is available at www.dinosoft.it/~midistation/index.html and soon will be available for downloading from BMT Micro (www.bmtmicro.com).

OmniUpdate

WebsiteASP.com announced that its free OmniUpdate service has been used to update over 10,000 Web pages by webmasters and independent web site owners across the globe. The service allows anyone with a Web site to update his site's content—including text, graphics, and links—on any server, no matter where the site is hosted. The free service allows Web site owners to update Web page content without buying, downloading, or installing any software whatsoever, using any computer on the Internet.

OmniUpdate FREE is a service of WebsiteASP.com, whose mission is to provide services that help Web site owners succeed. For more information, visit www.omniupdate.com or www.websiteasp.com.

Shareware BBS

Here's what's new this month at the OS/2 Shareware BBS (www.os2bbs.com).

- BZIP100.ZIP: Bzip2 compresses files using the Burrows-Wheeler block sorting text compression algorithm, and Huffman coding. Compression is generally considerably better than that achieved by more conventional LZ77/LZ78-based compressors.
- BOBSAPPS.ZIP: An INF file with information on OS/2 applications.
- ZERYXVS.ZIP: Zeryx Object add-on for Vispro C++. Progress bar that has a 3D

relief, sunken or raised. It displays in percentage or in numerical value. (Versions for Vispro REXX and Vispro C are also available.)

- WCASTDRV.ZIP: WinCast by Haupauge.
- RWL025.ZIP: RWL lets the user set the Begin- and EndLIBPATHs for any running PM process. It demonstrates a PM program's ability to enter any other PM process at will.
- FTPSR085.ZIP: An ftp daemon for OS/2. Of course you could always use the ftpd that comes packaged with Warp Connect and Warp 4, but this one has better security controls, together with extra features such as symbolic links.
- LEECHMP3.ZIP: Direct mp3 encoding from an audio CD with CDDDB access.
- BIOS_109.EXE: Matrox Setup and Utilities Rev 1.09. Supports G200 and G400 series.
- CHKPART.ZIP: CHKPART Version 1.0—An OS/2 program that checks and displays the partition table chain (MBR/EBR) on disk drives.

Goose I.I.O

Pretty Pop Software released Goose 1.10, a utility to check Web pages for updates. You can get a copy from Pretty Pop Music and Software at <http://pretypop.tsx.org>.

Goose is "Buy-My-CD-Ware"! If you like their software or music, they hope you'll buy their CD. You can listen to their music and order the CD at the MP3.com home page at www.mp3.com/pretypop.

W3C Tidy

HTML Tidy is a utility that checks and repairs HTML and XHTML, in conformance with the current W3C (World Wide Web Consortium) standards. If you write HTML—especially by hand—you should be using this free utility. The OS/2 port was just updated to match the July 8, 2000 version.

You can find the OS/2 port at www.dd.iij4u.or.jp/~kshimz/warp/tidy/index.html

and a Java port at www3.sympatico.ca/ac.quick.

RXSem

RXSem 1.03 is a REXX extension DLL providing programmers access to OS/2's native semaphores. The program supports both 16-bit and 32-bit mutex semaphores, and 32-bit event semaphores. Using DDE, it also gives you access to Netscape. You can set the current window's title, query and set a process' priority, find the process ID of an executable, and kill processes based on their process ID.

New in this release are features for window-list handling, querying what is showing, and toggling entries between visible and invisible.

RXSem is shareware, and registration (via BMT Micro) is \$20. It's also available from the author's home page, <http://tower.to.org/rexxsem>.

GOGO

GOGO 2.35 is an MP3 encoder for multiple platforms, including for OS/2. It appears to be free. Find it at http://homepage1.nifty.com/herumi/gogo_e.html.

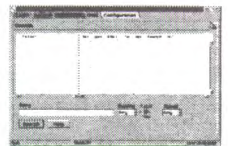
Warpster

Brian Havard is developing Warpster, a Napster client for OS/2. While the program is unfinished, the author is soliciting input. You can find the latest version at <http://silk.apana.org.au/warpster>.

Napster is a system for sharing MP3 music files—it's been in the news quite a bit, lately. You can learn more at www.napster.com.

NOCTIS

Andrea Di Paola (dipaola@coma.mporzio.astro.it) released NOCTIS 1.0, an astronomy tool. NOCTIS provides an optimized FITS format images viewer with simple photometrical capabilities to allow quick look of



astronomical images. NOCTIS' finding charts creation tool works on many databases including GSC, USNO, and NGC2000.

You can find the free tool at <http://hobbes.nmsu.edu/pub/os2/apps/science/astro/noctis100.zip>.

Major Major

Peter Moylan released Major Major, an OS/2 mailing list manager. With Major Major, you can create multiple mailing lists on your machine. People subscribe to these lists by mailing a "subscribe" command to Major Major. (There is also an "unsubscribe" command.) You can also subscribe/unsubscribe people in your role as system manager. Find it at <http://eepjm.newcastle.edu.au/os2/major.html>.

WebSphere 3 for OS/2

WebSphere Application Server Version 3 for OS/2 Warp is available to Warp Server for e-business customers who have IBM Software Choice subscriptions (as well as via Passport Advantage subscription).

WebSphere lets Web developers build dynamic, secure Web applications. In this version, Java-based server-side Web applications can be deployed on Warp Server for e-business, as well as many other platforms. Common, industry-standard programming interfaces make Web development easier.

For more information on IBM WebSphere Application Servers (generally), visit www.ibm.com/software/webservers. To obtain the new WebSphere Application Server Version 3 for OS/2 Warp, visit www.ibm.com/software/os/warp/swchoice.

gPhoto/2

gPhoto is a free, redistributable digital camera software application. It supports 105 digital camera models from various vendors, has a graphical user interface, HTML gallery engine and Live Camera! preview.

An OS/2 port of gPhoto is available. It requires XFree86/OS2 and can be downloaded from <http://birdy.hpage.net>. To find it, you'll need to select GNOME/2, then Download, and look in the GNOME-Apps section.

The next version, gPhoto2, is under development, and an OS/2 version is underway. With gPhoto2, you can write any front-end in any language or using any GUI toolkit. Also, gPhoto2 is intended to be extremely portable; according to the developers, a new I/O library will allow cross-platform serial, parallel, USB, IEEE1394, and network socket programming. It is not dependent on gPhoto, so any application can use it. gPhoto2 will run on Linux, BSD, Solaris, OS/2, Windows, BeOS, and possibly Macintosh. For more information, or to learn how to take part, check out www.gphoto.org. The alpha version of

gPhoto2 for OS/2 is at <ftp://ftp.netlabs.org/pub/gphoto/gphoto2.zip>.

XComp/2

Roman Stangl released XComp/2 1.5, a free recursive file compare utility. Find it at www.geocities.com/SiliconValley/Pines/7885/Download/DownloadXComp.html.

DeleGate

DeleGate 6.1.17 is a multi-purpose application level gateway, or a proxy server, which runs on OS/2, Unix, and Windows. DeleGate mediates communication of various protocols (HTTP, FTP, NNTP, POP, Telnet, etc.), applying cache and conversion for mediated data, controlling access from clients and routing toward servers. It translates protocols between clients and servers, merging several servers into a single server view with aliasing and filtering. Born as a tiny proxy for Gopher in March 1994, it has steadily grown into a general purpose proxy server. Besides proxy, DeleGate can be used as a simple origin server for some protocols (HTTP, FTP and NNTP).

The DeleGate home page is at www.delegate.org.

Sockd

Sockd is a very simple SOCKS server for OS/2. It supports version 4 of the SOCKS protocol. Bob Eager updated sockd to version 1.1. This version is supported directly



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by the OS/2 TCP/IP stack, so it is not necessary to use special "socksified" clients. It's at www.tavi.co.uk/os2pages/utis/sockd.zip.

Lotus Domino Server

Lotus updated OS/2 Domino server to version 5.0.4a. There are no new features, just bug fixes.

To find it, go to (take a deep breath before you type this): www.notes.net/qmrdown.nsf/QMRWelcome?OpenView&Start=1&Count=30&Expand=1

Lotus Domino is an enterprise solution for email and workflow. It also has Web server and Internet mail functions. While no Lotus Notes version 5 client for OS/2 is available (they stopped updating it at 4.6), there are reports that ODIN can make the Win32 version work.

RexxMail

Marcus de Geus (marcus@degeus.com) is planning to shortly release RexxMail, an OS/2 mail client written in REXX.

RexxMail is based on the concept that each mail message file is an object in its own right. It uses only the standard range of WPS facilities, including normal folders and templates and the extended attributes and program associations system, to control the behaviour of mail message objects. The result is an easy to use, fully drag and drop enabled, object-oriented, system-wide, highly flexible, mail message processing system.

RexxMail's purpose is to manage outgoing and incoming mail messages while they reside on the user's system. The actual transmission and reception of messages through network connections (using the SMTP/POP/IMAP protocols) is left to separate programs, such as sendmail.

You can start outgoing messages from templates, drop outgoing attachments into a folder, use automatic ZIP compression for outgoing mail attachments, and rely on automatic virus scan of incoming mail attachments. Because it's in REXX, you get

the full source code. RexxMail is non-intrusive: it adds no DLLs, and it does not alter system files. A dummy tryout mode lets you "send" and "receive" messages to and from yourself without using the network, and without upsetting an existing mail system. Also, it's compact: thanks to the OS/2 WPS, it takes only 50 KB of REXX code to do all this.

It's free, and should be available at www.degeus.com.

Win95key

Viktor Remennik's (vik@avi.kiev.ua) free Win95key utility enables the "Windows" key on your keyboard. Version 2.0 new features include expanded keyboard support and a plug-in-based architecture. Source code is included. You should be able to find it at <http://hobbes.nmsu.edu/pub/os2/util/keyboard/w95k2.zip>.

XWorkplace

XWorkplace is the successor to Ulrich Moeller's popular XFolder WPS enhancer. XWorkplace 0.9.4 is open source, released under the GNU General Public Licence (GPL). You'll find it at www2.rz.hu-berlin.de/~h0444vnd.

HTMEPM 99

HTMEPM 99 provides HTML extensions for EPM. This version supports HTML 3.2 and some 4.0 features, is menu-driven, and lets you preview pages in Netscape (via DDE). You'll find the utility on Hobbes at <http://hobbes.nmsu.edu/pub/os2/apps/internet/www/editors/htmeprm99.zip>.

MyVITRIX

Vitrix, Inc. is beta-testing MyVITRIX, a 100% Web-based time and labor management solution.

Perhaps you use time sheets and submit them to your manager through paper or fax. MyVITRIX would allow you to perform such activities through a Web browser, from anywhere in the world. MyVITRIX can also do:

- Job tracking/costing
 - Track and accrue benefit time, such as vacation/sick/personal days
 - Enforce payroll policies
 - Track project time, by having employees clock in/out
 - Provide real-time management reports (exportable to XML)
 - Track employee personnel information
- The company is soliciting input, so if this sort of application interests you, visit <http://my.vitrix.com> and fill out the beta application after taking the tour. It's free, and they'll give you an additional free three months of service for free after they fully launch the product.

NetRexx 2

Mike Cowlshaw's NetRexx 2 compiler/interpreter is now available for general use. The highlights of this (free) release are:

- The new NetRexx interpreter, which allows programs and classes to be run without being compiled.
- An easy-to-use interpreter API, which lets the NetRexx interpreter be used as an embedded scripting engine for other NetRexx or Java applications
- The '-prompt' option, which allows sub-second compilation and interpretation of NetRexx programs, without using a native-code compiler
- An expanded, reworked, and indexed User's Guide, available in both HTML and PDF formats
- An updated Language Overview, also now available in both HTML and PDF formats
- Revised packaging and simplified installation procedure, which makes installation and use easier.
- Simple NetRexxC.sh and nrc runtime scripts for Linux and Unix, which make NetRexx easier to use in those environments.

For full details of the changes, please see www2.hursley.ibm.com/netrex. ☺

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